

MANUFACTURABLE RECESSED STRAINED RSD STRUCTURE AND PROCESS FOR AD- VANCED CMOS

Abstract

A manufacturable way to recess silicon that employs an end point detection method for the recess etch and allows tight tolerances on the recess is described for fabricating a strained raised source/drain layer. The method includes forming a monolayer comprising oxygen and carbon on a surface of a doped semiconductor substrate; forming an epi Si layer atop the doped semiconductor substrate; forming at least one gate region on the epi Si layer; selectively etching exposed portions of the epi layer, not protected by the gate region, stopping on and exposing the doped semiconductor substrate using end point detection; and forming a strained SiGe layer on the exposed doped semiconductor substrate. The strained SiGe layer serves as a raised layer in which source/drain diffusion regions can be subsequently formed.